

Wildland fire study

Fuels management and information programs: A survey of visitors to Sequoia and King's Canyon National Parks

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Issue: Public acceptance is critical to the successful implementation of natural resource programs on federal lands. Managers concerned with implementing fuel management programs need accurate information about public attitudes toward fuel reduction practices. Research has established a link between citizen understanding and support for fuel management; however, there is a lack of information about the specific types of communication programs most effective for building support. Federal agencies have many outreach options (e.g., brochures, newspapers, public service announcements, visitor centers) but limited resources dedicated to providing information to their publics.

Objectives: The purpose of this project is to evaluate public acceptance of wildland fuel programs on federal lands and the role of communication programs in developing understanding and support. Specific objectives include:

- Assess public opinion about treatment alternatives and agency communication strategies in forest communities.
- Measure public confidence in resource agencies for effective implementation of fuels reduction practices.
- Evaluate the usefulness of different communication techniques and the role of information programs in increasing understanding and establishing support for agency activities.

Methods: This study at Sequoia and King's Canyon National Parks (SEKI) was part of a larger project that included evaluations of local outreach programs and partnerships in multiple study areas in the western US. Similar evaluations were conducted of partner (US Forest Service, Bureau of Indian Affairs, Bureau of Land Management, Oregon Department of Forestry, and OSU extension) outreach activities at the World Forestry Center in Portland, OR; the High Desert Museum in Bend, OR; and at the Heritage Demonstration Area in Metolius, OR. Longer term monitoring of partnership programs is also underway on the Deschutes National Forest, OR and on the Colville National Forest, WA.

Findings presented here are a subset of data from a survey completed by visitors to SEKI in summer 2003. Overall, 395 visitors completed a brief survey on-site and received a more extensive follow-up survey in the mail, which 269 completed for a 68% response rate. One objective for surveying visitors after their trip was to compare responses to determine if exposure to forest settings and Park interpretive programs influenced their thinking. The follow-up survey replicated questions from the on-site questionnaire and included additional items for further analysis. Responses presented here come from those who completed both questionnaires. Paired t-tests were used to compare responses from replicated questions on the on-site and mail surveys; significant differences are noted.

Preliminary Results:

- There was a high degree of variability in how much thought respondents give to wildfire; overall three-fourths thought about wildfires a moderate or great deal prior to visiting SEKI (Figure 1).

Figure 1: Prior thought given to wildfire

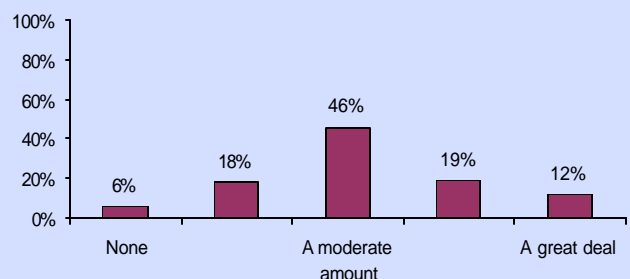
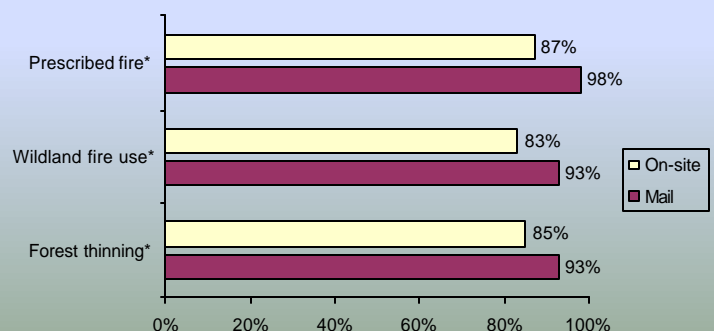


Figure 2: Familiarity with fuel management practices

- To determine the influence of Park information programs respondents were asked whether they had heard or read about prescribed fire, wildland fire use or thinning as fuel management methods (Figure 2). A majority of participants had heard of each method before their visit to SEKI. A significantly greater number indicated familiarity with each method following their visit, suggesting information programs were effective at increasing awareness of these fuel management strategies.



* $p < .05$

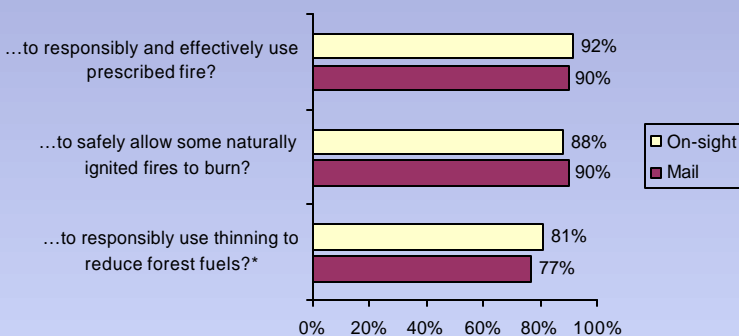
➤ Participants were provided a short description of each fuel management practice and asked their opinions about its use (Table 1).

Overall, prescribed fire and wildland fire use received the most support. However, nearly three-fourths also supported the use of thinning.

Table 1: Acceptance of fuel management practices

	Acceptable	Neutral	Unacceptable
Prescribed fire	83%	8%	6%
Allow some naturally ignited fires to burn	82%	7%	7%
Thinning	72%	9%	14%

Figure 3: Confidence in National Park Service to use fuel management practices



(Percent citing full or moderate confidence)

* $p < .05$

➤ Using a 4-point scale (full, moderate, limited, none), the next question asked about public confidence in the National Park Service to use certain fuel management practices (Figure 3). Participants were equally confident in agency use of prescribed fire and natural fires to achieve objectives. Interestingly, there was a significant decline in those expressing confidence in agency use of thinning over the study period, although a strong majority still expressed confidence in its use.

Table 2: Opinions of fuel management practices

	Survey	Agree	Disagree	Don't Know
• All fires , regardless of origin, should be put out as soon as possible.*	On-site	16%	78%	6%
	Mail	3%	93%	4%
• Prescribed fires or controlled burns are too dangerous to be used.*	On-site	5%	83%	12%
	Mail	2%	93%	5%
• Managers should periodically burn underbrush and debris.	On-site	84%	3%	13%
	Mail	86%	2%	13%
• Prescribed fire or controlled burns should not be used because of potential health problems from smoke.	On-site	6%	81%	14%
	Mail	3%	86%	12%
• It is not worth the risk to allow any wildfires to burn.*	On-site	12%	81%	7%
	Mail	4%	88%	8%
• Thinning for fuel reduction will lead to unnecessary harvesting.	On-site	15%	51%	34%
	Mail	18%	55%	27%

* $p < .05$

➤ Respondents indicated their agreement with six statements regarding the use of fuel practices (Table 2). Responses to three questions changed significantly throughout the study period; in each case participants responded more favorably towards the fuel practices following their visit to SEKI. In the mail questionnaire, significantly more (93%) disagree that all fires should be put out and that prescribed fires are too dangerous to be used. A strong majority (86%) agrees that managers should periodically burn underbrush despite potential problems from smoke. Significantly more disagree that it is too risky to allow some wildfires to burn. Finally, after their visit to SEKI over one-fourth of respondents are still unsure whether thinning would lead to unnecessary harvesting (it is important to note that thinning is not a focus of information programs at SEKI).

Table 3: Knowledge of fuel management outcomes

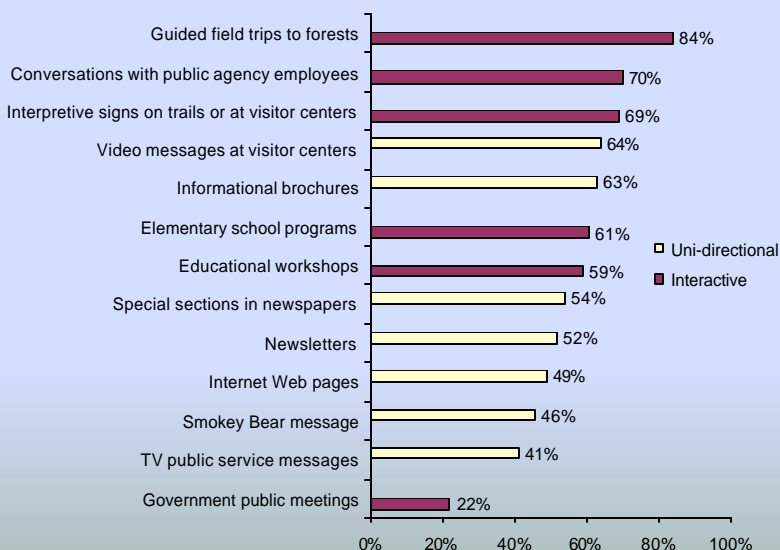
	Survey	Generally true	Generally false	Not sure
• Prescribed fire or controlled burns effectively reduce amounts of fuel in most forests*	On-site	70%	9%	21%
	Mail	90%	2%	8%
• Prescribed fires or controlled burns reduce the chance of high-intensity wildfire	On-site	89%	3%	9%
	Mail	91%	3%	6%
• Wildfires have played a significant role in shaping natural forests in the western United States	On-site	87%	3%	10%
	Mail	93%	2%	6%
• Many plants and trees require occasional fires so that new seeds or seedlings can sprout	On-site	92%	2%	7%
	Mail	94%	2%	4%
• Wildfires usually result in the death of the majority of animals in the area	On-site	12%	66%	22%
	Mail	9%	71%	20%
• A history of suppressing wildfires has increased the risk of a destructive fire in the western United States	On-site	68%	10%	23%
	Mail	75%	8%	18%

Italicized percentages reflect the most correct answer.

* $p < .05$

➤ Respondents were presented with six statements and asked to indicate whether they were generally true, generally false, or if they were not sure about the answer. For presentation purposes, only responses from the mail survey are displayed in Table 3. Only responses to one question changed significantly throughout the study period; the percentage indicating prescribed fires effectively reduce fuel loads increased from 70% to 90%. Overall, responses indicate that participants had a relatively high level of understanding as over 90% selected the most correct answer on all but the final two statements. Even after visits to SEKI, there was still a relatively high amount of uncertainty regarding the impact of wildfires on wildlife as well as the role of past fire suppression activities on today's fire risk.

Figure 4: Helpfulness of fire information programs



(Percent rating program as very helpful)

➤ Information and knowledge play an important role in forming support for management practices. Citizens rated the helpfulness of 13 different information programs often used by land managers on a three-point scale (none, slight, very) (Figure 4). For presentation purposes, the outreach programs are depicted as either interactive or uni-directional. Interactive programs are those that provide for either personal contact with agency representatives or on-the-ground learning experiences. Uni-directional programs are those that typically involve a one-way flow of communication from the agency to the public.

Overall the top 3 most helpful programs were interactive, indicating greater dividends may be achieved from this form of outreach. Of the interactive programs only public meetings failed to resonate with a majority of respondents.

➤ Respondents were also asked to rate 11 specific outreach programs used in SEKI (Figure 5). Participants indicated whether they had participated in each program and then rated the program's usefulness on a four-point scale (from highly useful to not useful). The light-colored bars represent the percentage who had participated in each program; the dark bars illustrate the percentage of these who rated the program as highly useful. Programs are arranged according to their usefulness ratings.

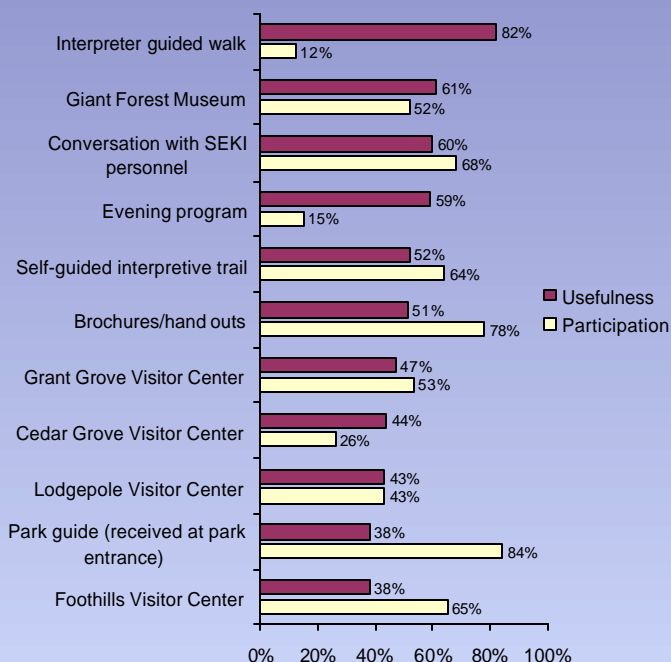
Overall, most programs received relatively strong usefulness ratings. While the percent rating each as highly useful ranges from 82% to 38%, six programs were useful to over half of participants.

Including the participation levels increases the complexity of interpreting program ratings. For example, interpreter guided walks were the most highly rated program; however, they also had the lowest level of participation. Although they had a high payoff, a relatively small number of visitors took advantage of this program. Interestingly, the park guide handed to visitors upon entering SEKI had the highest level of participation of all programs, but only 38% found it to be very useful. These findings reinforce the importance of offering a variety of outreach activities.

Regarding visitor centers, the recently renovated Giant Forest Museum was rated substantially higher than the others. Ratings seem to indicate that participants find the new exhibits and displays useful. Of particular importance are the ratings received by the Foothills Visitor Center. For the majority of visitors to SEKI, the Foothills Center is their first interpretive opportunity as it is located just inside the primary park entrance. While receiving more visits than any other visitor center, only 38% rated it as very useful. This may indicate a missed opportunity to connect with visitors.

Conversations with SEKI personnel received considerably high ratings and also had one of the highest levels of participation. It is likely that these scores reflect not only formal contacts with SEKI interpretive staff, but also include less formal interactions with SEKI personnel. Ratings reinforce the importance of all park personnel, not just the interpretive staff, being willing to interact with visitors.

Figure 5: Usefulness of SEKI information programs



(Usefulness ratings illustrate those rating each program as highly useful)

Table 4: Visitor opinions of fuel management practices as a result of experience with SEKI interpretive programs

	More Acceptable	Less Acceptable	Unchanged
Prescribed fire	34%	2%	64%
Wildland fire use	36%	2%	63%
Thinning	29%	3%	68%

(Question asked in the post-visit mail survey)

➤ The next two questions focus on the influence of SEKI interpretive programs and were only included on the mail questionnaire. First, Table 4 indicates that over one-third found prescribed fire and wildland fire use more acceptable. Additionally, 29% also found thinning more acceptable even though its coverage in interpretive material was limited.

Table 5: Outcomes of SEKI interpretive programs

Based on your experience with SEKI interpretive programs do you feel...	Yes	No	No Change
... more knowledgeable about the risk of wildfire in the western US?	44%	6%	50%
... more knowledgeable about the role of fire in forest ecosystems?	51%	3%	46%
... more knowledgeable about fuel management practices?	40%	10%	51%
... more supportive of agency fuel management programs?	40%	8%	53%
... more confident in the ability of National Park Service and Forest Service managers to implement responsible and effective fuel management programs?	39%	8%	53%

(Question asked in the post-visit mail survey)

➤ Similarly, high numbers of respondents indicated they were more knowledgeable about the risk of wildfire, the ecological role of fire, and fuel management practices. A substantial number also indicated they were more supportive of agency fuel management programs (40%), and confident in federal managers (39%).

Conclusion: Wildfires and fuel management are salient issues for respondents, indeed most think a moderate or great deal about wildfires and were familiar with fuel management practices. Strong majorities of participants are knowledgeable, and supportive, of prescribed fire, wildland fire use, and thinning activities and have confidence in the ability of federal managers to use these tools. Participants also indicated increased agreement for fuel treatments following their visit to SEKI.

Participants recognized three interactive forms of communication (field trips, visitor centers, conversations with agency employees) as the most useful outreach activities for fire management. Responses were similar for SEKI interpretive programs, as programs that provided for interaction with park staff were particularly well rated. Interpreter guided walks were the most highly rated program, suggesting the potential benefits of getting people on sight with the ability to interact with agency personnel. Unfortunately, relatively few visitors took advantage of this opportunity. Participants also responded favorably to the Giant Forest Museum which has recently been renovated. Findings also suggest an important outcome of SEKI interpretive programs. Specifically, following their visit to SEKI a substantial number of participants indicated that they were more knowledgeable about fire and fuel management activities and more supportive of, and confident in, NPS fuel management programs.

The management issues discussed in this study are all areas of concern for citizens; especially when their local communities or places they care about are subject to treatments or threatened by wildfire. Responses suggest that SEKI interpretive programs can play a key role in reducing uncertainty and increasing support for fuel management activities.

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